

CLAIMS

- 1 1. In a voltage controlled oscillator (VCO) defining a feedback loop that generates
2 an output signal with a frequency responsive to an input control signal, the VCO further
3 comprising:
4 a control FET transistor, defining a threshold voltage V_t , a gate, source and drain,
5 where the control signal is connected to the gate,
6 a means for receiving the current from the drain of the FET, wherein the current is
7 responsive to the input control signal, wherein the current controls the frequency of the
8 output signal,
9 a bipolar diode connected to receive the current from the source of the FET,
10 wherein the diode compensates for temperature effects of the FET.
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- 1 2. The VCO of claim 1 further comprising a resistor in parallel with the bipolar di-
2 ode.
- 1 3. The VCO of claim 1 wherein the diode comprises an NPN base emitter and a PNP
2 base emitter arranged in parallel with each other and with the collectors of the NPN and
3 the PNP connected to their respective bases.
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- 1 4. The VCO of claim 1 further comprising:
2 a second FET, configured with its gate connected to its drain,
3 the second FET drain connected to the drain of the first FET wherein the current
4 through the second FET is in parallel to the current through the first FET.
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- 1 5. The VCO of claim 4 wherein both the first and second FET's are N type
2 MOSFETS.
3
- 1 6. The VCO of claim 4 further comprising a third N type MOSFET with its drain
2 connected to its gate and placed in series with the second N type diode connected
3 MOSFET.

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1 7. The VCO of claim 1 wherein the means for receiving the drain current from the
2 first FET is a diode connected fourth FET.

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1 8. The VCO of claim 7 further comprising a fifth FET connected as a current mirror
2 to the fourth FET, wherein the current from the fifth FET is also used to control the out-
3 put signal frequency.

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1 9. In a voltage controlled oscillator (VCO) defining a feedback loop that generates
2 an output signal with a frequency responsive to an input control signal, the VCO further
3 comprising:

4 an first N type MOSFET with its gate connected to the control input signal,
5 a resistor connected to receive the source current from the first N type MOSFET,
6 a bipolar NPN diode connected transistor and a bipolar PNP diode connected
7 transistor both connected in parallel with each other and with the resistor and arranged to
8 receive the current from the source of the first N type MOSFET,

9 a diode connected P type MOSFET arranged with its drain connected to the drain
10 of the first N type MOSFET transistor and arranged to receive the current from the drain
11 of the first N type MOSFET,

12 second and third diode connected N type MOSFET transistors in series with each
13 other and connected to and arranged to draw current from the drain of the P type
14 MOSFET, and

15 a second P type MOSFET connected as a current mirror with the first P type
16 MOSFET transistor, wherein the currents through the first and the second P type
17 MOSFET's control the output signal frequency.

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1 10. The VCO of claim 9 wherein the currents through the first and the second P type
2 MOSFET transistors follows a square relationship with respect to the input control signal.